ELECTRICITY on the FARM

The National Magazine of Rural Electrification

APRIL

Treat Milking Machines Right
Files for the Farm Shop
Reader's Suggestion Forum
How to Shear Sheep Electrically
Job Analysis for Efficiency
Concrete Mixer from Scrap Pile
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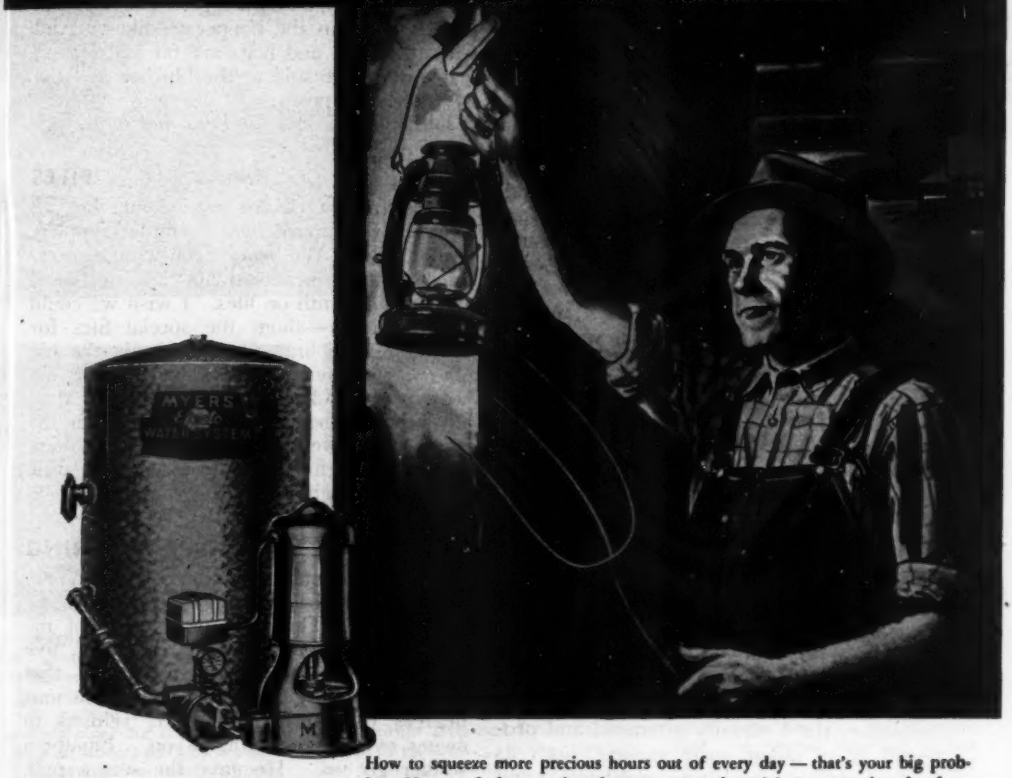

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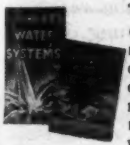

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Editor's Chat

SUNNY AS A SUBWAY TRAIN

You take the 42nd Street subway on the third level under the Grand Central Station. The train scoots along through the rock tunnel under the busy streets of New York and dips deep under the East River. It could be night. There's no sun down there. Then you come out of that hole in the earth and find yourself travelling in the brilliance of full sunlight on a trestle over Long Island. Most subways end in sunlight. Even war, the subway of civilization, can end in sunlight if it is pointed toward the light and we keep the motors running and our eyes ahead.

SELF-FEEDER FOLKS

In recent years self-feeders have become popular for hogs, hens and steers. They provide an easy way for the farmer to do his feeding. The hogs and hens can step to the feeder or lie by it and feed whenever they feel that way. They like it. The hogs get fat.

There is within our body politic a growing momentum toward the self-feeder idea for humans. It is evident in the ever-expanding peace-time functions of Government. The leaf-raking jobs; the relief rolls, handled from Washington, which put a preminum on indolence; the Federally promoted and protected labor union wage rackets, such as featherbedding, compulsory membership and the check-off; Federal lending; subsidized education; subsidized crop production; subsidized hot school lunches; payments for not growing crops; attempts to limit initiative and income; fantastic benefit and pension schemes; and more; and more; and more.

Someone likes all of these schemes and paternalisms. We revel in seeing the self-feeder put down in our community and we squeal and scratch to have our hopper filled for fear someone else will get more. Much of that "feed" tickles our palates. We "lay eggs" and "get fat" for the boss. We like it.

There is just one thing about this self-feeder business that we overlook. The fellows who fill the hopper also build the pens. The hen must stay where she is put; shoo when she's shoo'd; lay eggs or be culled. She cant' hatch her own eggs. The boss can put anything in the hopper he likes. And when the hens and hogs are fat and feeling prime, they are sold to the butcher and the boss takes the profit.

I like self-feeders *for hens and hogs.*

FILES

Files are not electric equipment; but no electrically equipped shop would be complete without files. We believe you will be interested in the educational and semi-technical article this month on files. I wish we could tell you more—about the special files for aluminum, for brass and for lead; the big but very finely cut Swiss pattern file my barber used to keep his shears sharper than any other barber I ever knew. When the war is over we will be doing and making many more things in farm shops. File knowledge might help.

SOLDIER TRAINING

On our commuter's train to New York, the seats have backs that swing over for the return trip. The third seat ahead of me was turned wrong. As the car filled, five different men walked up, looked at that empty seat and gave it a yank with various degrees of determination. It refused to swing over. They walked on. Finally a soldier got on. He gave the seat a pull. It resisted. He took hold of its middle. It gave a little, but still stuck. He squeezed in behind it and wiggled that seat and pushed at different points until the resistance broke down and the back swung over. He and a civilian, who just came along, sat down.

Those boys win battles.

George Kable

ELECTRICITY ON THE FARM
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★ · WARTIME STRATEGY ON THE FARM ★

"If I didn't have electricity I'd sell the herd!"

That's Clyde Schneeman of Pontiac, Illinois, talking.

About eight years ago, young Don Schneeman—an ardent 4-H'er—persuaded his dad to stock his 240-acre farm with pure-bred Holsteins.

Since then, milk production has improved consistently . . . because of the fine herd of Holstein milkers . . . and because of the *ever-expanding use of electricity about the farm.*

But let Clyde and Don Schneeman tell you about how electricity helps them *save labor, cut production costs, and increase profits* on their dairy farm!

"WE INSTALLED DRINKING FOUNTAINS about a year ago," says Clyde Schneeman. "Since then our average annual butter fat production has jumped from 430 to 475 pounds per cow—for a *total profit increase of about $375.00 a year.* The 7 automatic fountains cost only $50.00 installed, and the cost of electricity is only a few pennies a day!"

"WHEN WE MILKED BY HAND" says Don Schneeman, "it took dad and me an hour and 15 minutes, twice a day, to milk our herd of 17 Holsteins. Now, with our electric milker, my brother Deb and I can do the job in 35 minutes . . . in the morning and evening. This milker saves each of us *1 hour and 20 minutes a day* for other important work."

"WE JUST COULDN'T GET ALONG without our automatic electric water heater. It keeps the milking machine and utensils clean and sanitary. We use electricity in a lot of other ways, too . . . for elevating corn, for electric fencing, in our farm workshop, and so forth. *If I couldn't have electricity, I'd sell the herd!"*

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"It does the work of 2 Men, 2 Mules and 2 Sledges"

Broilers, such as are raised in huge flocks in the South, prosper on an abundance of water. One of these successful chicken growers says that an electric pump, which he recently installed, does the work of 2 men, 2 mules and 2 sledges and relieves him of the worry of keeping his 7,000 broilers supplied with all the water they want.

It may not seem a serious matter when you let your livestock's water supply run low, but it really means that you lose a great deal of money.

Farmers have found that installation of a fully automatic, electric water system has increased their milk, meat and egg production as much as 25%.

A Goulds Jet-O-Matic will save you money; relieve you of the aching, back-breaking toil of lugging tons of water and release you to do other important jobs around the farm. It may not do the work of 2 men, 2 mules and 2 sledges for you, but you'll rate it as being worth the services of a good hired hand at a fraction of the cost of a hired hand.

Some Jet-O-Matics are available now. . . Ask your nearest Goulds dealer to show you the many exclusive features of this popular, foolproof, fully automatic electric water system, or write for complete descriptive literature on Goulds Jet-O-Matic.

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APRIL 1944

Treat That Milking Machine Right

By RALPH J. BUGBEE

A WELL known Vermont farmer who has a consuming desire to be a better manager says that by actual count it took him 2,714 squirts to hand milk 29.75 pounds of milk from one cow. Maybe she was a hard milker, but at that rate, to milk 10 cows per day would take 40,000 to 50,000 squirts. It is no wonder that so many farmers are troubled with crippled hands and wrists after years of such a physical strain. The electric milking machine has made this work unnecessary.

Cost of a Milker

What does it cost to own and operate a milker? Let's do a little figuring, assuming that we have a 20-cow herd to milk. Most farmers say that a milker is not justified unless there are at least 10 to 12 cows to milk regularly. An electric milker will cost new, installed with all piping and appliances about $250, depending upon the type of pail wanted. If you are the progressive type of farmer who knows the value of keeping records on your cows you will probably want single units so that the Dairy Herd Improvement Association Tester can weigh the milk from each cow, or you can do it yourself. Two single units will cost more than one double unit but they make a more flexible outfit. Depreciating this equipment at 10% per year, which is high, you get a yearly charge of $5.00. Repairs, rubber replacements, disinfectants, etc., will probably not exceed $15.00.

The electric power costs for milking machines on three well managed farms on the lines of the Central Vermont Public Service Corp. were studied recently. Three different types of milkers common in Vermont were used on these farms. From the following table you will see that there was not much difference in the kw-hrs used per cow per month or the kw-hrs per 100 pounds of milk produced. Observations of electric bills on many farms in Vermont indicate that an average of 2 kw-hrs per cow per month is fair. Average Central Vermont Public Service Corp. farm customers can figure farm use at 2c per kw-hr.

Almost every farmer who milks 20 cows or more will admit that the milking machine enables him to operate his farm with one less hired man. Such a man today will cost more per month in cash alone than the total cost of milker operation for a year.

Above: Milker in use on farm of Marion Atwood, Rutland, since 1917. **Left:** Forty thousand squirts a day.

In these war times, with farm labor at a premium, the electric milker is playing an important part in keeping up milk production. In Vermont, where dairying is the chief source of State farm income with total sales last year in excess of $35,000,000 the farmer is rare who does not have or want to get an electric milker. He is giving it the best of care because so much depends on it.

Milking Machines on Three Vermont Farms

Farm	No. 1	No. 2	No. 3
Motor hp	2	½	½
No. units	3D	2D	2S
No. operators	1	2	2
Time given to care of milker daily	½ hr.	1 hr.	½ hr.
Cows milked	24	25	14
Average daily production. Pounds	554	546	338
Minutes milking time { Night	65	64	45
Minutes milking time { Morning	70	72	45
Kw-hrs per month	56	42	28
Kw-hrs per cow per month	2.34	1.68	2.0
Kw-hrs per 100 pounds of milk	.034	.026	.026

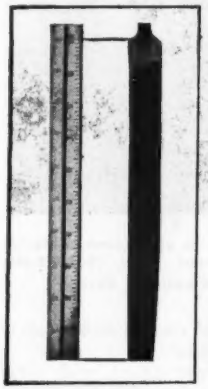
Summary of Yearly Charges

Depreciation on $250.00 at 10%	$25.00
Repairs and replacements	15.00
Kw-hrs 20 cows at 2 kw-hrs per cow per month at 2c	9.60
Herd total cost per year	$49.60
Average total cost per cow per year	2.48
Average cost for electricity per cow per year	.48

Files for the Farm Shop*

Files Have a Language All Their Own. Types Available; What They Are Used For; Best Files for Farm Use

WHEN you try to write about files, you collide headlong with a series of terms which seem pretty bewildering until you get used to them. Take, for example, the term "Bastard" which is commonly applied to many of the files you use on your farm. It simply means that a file has more teeth per inch than a Coarse file and not as many per inch as a Second cut or Smooth file. Nobody seems to know just how the term originated but the best guess seems to be that years ago a file maker decided he wanted a series of teeth that would be in between those regularly produced. And the term "Bastard" was the first name that occurred to him. Anyway, it stuck and has been considered perfectly good use for a good many decades.



The length of a file is measured from end to shoulder, exclusive of the tang.

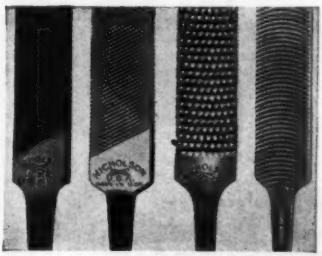
Then there's the question of length. Ordinarily you'd expect "length" to mean the over-all dimension of the file; but curiously enough, it doesn't mean that at all. In file language, length means the distance from the point of the file to the shoulder—exclusive of the tang—as shown in the illustration.

The "Cut" is another term which requires a word or two of explaining. "Cut" not only means the degree of coarseness; i.e., "Coarse," "Bastard," "Second-Cut" and "Smooth," but it also refers to the type of teeth, such as Single Cut, Double Cut, Rasp and Curved Tooth. In brief, to select a file for any use, the purchaser should specify the length, exclusive of tang, the shape, the kind of teeth he wants on the file and the degree of coarseness he prefers.

10-inch Flat File sections. Left to right: Bastard cut, second cut, smooth cut. Coarse cut files, which are coarser than the bastard cut, are seldom listed by manufacturers in their regular line.

10-inch Mill File sections. Left to right: Bastard, second cut, smooth.

Cross-section shapes of files commonly available. Top row, l. to r.: Warding file for locks, keys, etc.; knife file. Bottom row, l. to r.: Square, round, pillar and mill with two round edges. Square and round files are made both tapered and straight.



From left to right: Single-cut or mill file, double-cut or flat file, rasp cut, and curved tooth.

Although there are more than 1,400 kinds of files, most farm shops can get along very nicely with a half dozen varieties, the total number of files of each kind depending on the amount of filing that is done. Following is a suggested assortment, which has been found adequate on a number of farms:

Filing distributor points with a tungsten contact point file.

Six Files Recommended for the Farm Shop

(Listed in order of preference)

8" tapered mill bastard
6" slim taper single cut saw file
10" half round bastard
12" plain horse rasp—for hoofs and wood
5½" tungsten contact point file
6" tapered round bastard

The Slim Taper File belongs to the three-cornered or triangular branch of the file family and is used for sharpening the ordinary handsaw, either crosscut or rip. For saws with 5 to 7 points per inch, a 6" or 7" Slim Taper is used; for saws with 8 to 9 points per inch a 7" Extra Slim Taper is recommended; and for saws with 10 to 11 points per inch a 4" to 5½" Extra Slim Taper is used. The difference between Taper Slim Taper and Extra Slim Taper Files lies simply in the size of the cross-section, the Slim Taper having a narrower width than the Taper and the Extra Slim being still narrower.

Saw files. Left to right: Taper, slim taper, double extra slim taper.

Mill Bastard Files are among

*Facts for this article and illustrations including cover illus., courtesy of Nicholson File Co., Providence, R. I.

the most valuable files in the shop. They may be used for sharpening cross cut saws; for sharpening axes, pruning shears and other edged tools; and for touching up any surface where a smooth finish is more important than rapid removal of stock. The eight-inch length is suggested although the ten- or twelve-inch size may suit the reader's preference.

Leaving the Mill File, with its single cut teeth, we come to the Double Cut group. A Flat Double Cut File is very useful for rapid cutting of metal. If the number of files in the shop is limited, a Half Round in lengths of 6" and over, double cut on both flat and curved surface, gives the user the advantage of two files in one.

Most farms require a Plain Horse Rasp for use in cutting down and shaping hoofs for shoeing. Horse Rasps, both with and without tangs, have rasp teeth on one side and file teeth on the other.

The last files on our recommended list are the Coil Files—5½" in length, double-cut and thin. These are used on the contact or gap points of spark plugs, coils, magnetos, electric bells and switches. In dressing distributor points, especially, this type of file must be wielded with a perfectly straight "non-rocking") stroke, in order that the broad surfaces of such contact points are filed perfectly flat.

Job Analysis for Efficient Management

IN an address before the American Society of Agricultural Engineers, Dean E. C. Young of the Purdue University Graduate School, told of a new approach which is being made to the problem of higher farm efficiency.

Some Farmers More Efficient

An agricultural engineer and a farm management man were sent out to study the labor operations on a number of Indiana dairy farms. Their task was to make a job analysis of the different operations on each farm, then study the results to find which farmer was doing the job best and with the least labor, and decide whether the other farmers could profit by his methods. The Dean said the hardest job was to keep the two specialists on the right track, e.i., studying what the farmers were doing. The farm management man wanted to set up budgets for the farms and work out ideal management plans, while the agricultural engineer usually had an idea for a machine which would do the job better. In many cases they were right, as there was considerable room for improvement, but they stuck to their job of appraising the farm jobs as farmers did them. Here is just one of many interesting tabulations which came out of the study:

Labor-Hours per Year per Cow

Cows in Herd	10 cows	16 cows	23 cows
Av. hrs. per yr.	132	115	96
Av. 1st quartile	110	92	75
Av. 3rd quartile	176	153	139
Range	75-307	65-300	48-235

A glance at the first line giving the average hours of labor per cow per year shows that this was less as the size of the herd increased. But that is only one part of the story. Line two shows what the best group of farmers did, and line three, the least efficient group. Note that the best group put in fewer hours per cow with 10 cows (110 hrs) than the less efficient ones put in who had 23 cow herds (139 hrs.). Notice also the wide range in the number of hours used by different farmers with the same size herd—line four. These latter comparisons tell the real story, namely that for the farmer who wants to do a good job, averages do not mean much. Some farmers with only ten cows managed them with only 75 hours of labor per year, while some farmers with 23 cows put in as much as 235 hours per cow per year. It comes down to a case of studying each job—feeding, milking, cooling milk, cleaning barns—and developing the habit of doing that job the *easy way*. Even though only a small amount of time is saved on each job, if the job is made easy enough to get it done, the sum total makes the difference between a well managed and a poorly managed farm.

The Dean was not talking particularly about the use of electricity on the farm. But we have been. It is some of these little things that electricity can do to save labor and time and improve products that make it really valuable in a good farm management program.

Twelve land grant colleges now have job analysis studies under way. Here's a list of them:

Job Analysis Projects

State and Projects

Indiana—Tomato picking; Tomato peeling; Hog growing
Nebraska—Hay making; Irrigation
Minnesota—Milk handling
Illinois—Beef production
Washington—Apple picking
Colorado—Potato, beet harvest and production
Oregon—Specialty crops
New York—Dairying; Handling cows; Potato production
New Jersey—Potato harvesting
Vermont—Dairy chores
Kentucky—Burley tobacco production
Florida—Winter vegetable production

Keep in touch with your Experiment Station to get the results of their findings and for help with your own problems.

Future of Dairying

At a recent rural electrification conference, Mr. C. G. Cushman, Dairy Specialist of Clemson College, S. C., made some thought provoking statements. He expects intensive small family farms to predominate after the war. Milk production will move from the big producer-distributor organizations back to the small farm. (75% of the milk in S. C. is produced by the companies that distribute it.) These small sanitary farm units will be absolutely dependent on electricity.

He expects farm butter making to pass out of the picture because it is wasteful. Whole sweet milk will be delivered and butter will be made from high-grade sweet cream, the skim milk being dehydrated. There may even be a change in milk marketing, the whole milk being powdered in low cost areas adapted to dairying, and reconstituted and sold as liquid whole milk in deficiency areas.

Concrete Mixer from Drum and Auto Parts

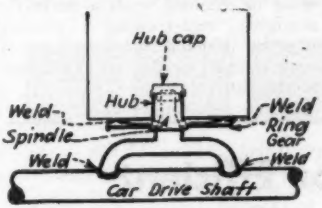
By **WILBUR TRAVIS**
Puget Sound Power & Light Co.,
Everett, Wash.

THE homemade concrete mixer in the attached picture was built in my home workshop.

A section 2 ft. long was cut with a hacksaw from the bottom part of a large hot water tank 20" in diameter. Two mixing baffles were welded inside the drum as shown and a Chevrolet front wheel hub welded into the center of the bottom of the drum. The spindle of the hub was welded at right angles to an automobile drive shaft which supports the mixer and motor. Spokes were then welded to a 120-tooth flywheel ring gear and onto the hub.

A Jack shaft assembly was made from bushings, shaft, and housing from an automobile steering worm with a 10-tooth Bendix drive gear on one end and a ½" x 6" V pulley on the other. A plate is welded to the top of the auto driveshaft and this assembly bolted to the plate. The Bendix gear meshes with the large ring gear to drive the drum.

This Jack shaft assembly is driven from another Jack shaft assembly built from two Chevrolet valve rocker arms as bearings, welded to a plate, using the auto rocker arm shaft, and a ½" x 2½" V drive pulley and a ½" x 6" V driven pulley.



Spindle, hub and bowl assembly.

This assembly was also bolted to a plate that was welded to the under side of the drive shaft.

The ¼ H.P. washing machine motor with a ½" x 1½" V pulley was bolted to a plate which was welded to the top of the drive shaft. This completed the drive mechanism.

Four large bridge washers were welded to the drive, one on each side of the supporting wood posts through which the shaft passes.

A 3-ft. length of ¾" pipe and a pipe T were welded to the end of the shaft to make the handle for tipping the drum. A collar type of latch is mounted on the handle and a stop on the wood frame to hold the bowl in mixing position.

The mixing unit is counter-balanced using half of a Ford front spring main leaf and a couple of coil springs attached to a cross member in the wood frame at one end and welded to the center of the supporting shaft at the other end.

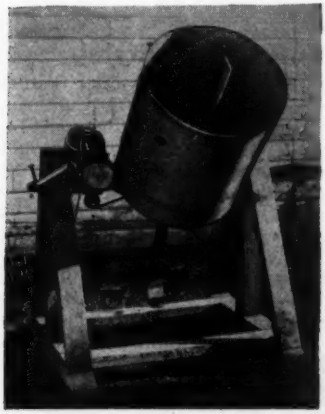
The rpm of the shafts is as follows:

Motor speed 1,750 rpm.
No. 1 Jack shaft 437.5 rpm.
No. 2 Jack shaft 182 rpm.
Drum speed 15 rpm.

This unit does a very good job mixing, operating with ease and handling 2½ to 3 cu. ft. of material to the batch.

I believe this same unit would be very handy around a farm in seed treating and mixing small amounts of feed. An old oil drum could be used for the bowl as satisfactorily as the water tank.

EDITOR'S NOTE. In response to an item in our Question and Answers Column we have had a number of plans sent in for homemade concrete mixers. We will publish several. This is the first.



Above: Front view of mixer showing mixing baffle inside the drum, the motor and lower jack-shaft mounting. The drum is in mixing position. It is tipped down with the handle while it is running to dump. **Right:** Rear view showing supporting frame and auto drive-shaft which carries the drum, jack-shafts and motor. Also the spring counter-balance. The motor, jack-shafts and drum all tip together on the supporting shaft to which they are attached.

Reader's Suggestion Forum

(In Two Parts; Part 1)

What Our Readers Think About Farm Electric Equipment for the Post War Period. New Equipment They Want. Reasons Why They Have Not Bought What Was Available

THIS is the second article we have published on this subject. The first one was in the November 1943 issue. Both articles present answers to the questions:

1. *What new electrical device, equipment or process would help you in your production program?*
2. *What is wrong with equipment that has been available that has kept farmers from using it?*

We wish each of you could sit down and read all of the letters we have received. They vary from a few lines to five pages in length. They give reasons, descriptions and details which space does not permit us to reproduce. Many of the letters were outpourings of hopes, pent-up desires and farm experiences; some "took down their hair" and suggested what was wrong with equipment, companies, and farm economics in general. We are glad for all those letters and every one was given serious thought. If your letter is not printed here, your suggestions may nevertheless be going to the place where they will do the most good.

Following some of the suggestions, we are printing in smaller type, explanatory comments of our own.

Suggestions for Farm Equipment

1. "My suggestion is: A small pasteurizer, completely electrified, *acceptable* to city health departments, capacity 50-60 quarts and selling for about $250. Many goat dairies have had to fold up because of city requirements for pasteurization. $900 to $1,000 is too large an expense to saddle a small cow or goat dairy with."—MRS. MEARLE RHINESMITH, Wanaque, N. J. (Breeders of milk goats).

2. "I'd like a carrier such as you see in large department stores to carry bales of hay and straw, feed and water to hogs and chickens, hay to cows and horses, milk to the house, litter from the hen house. I just finished a wash. Just think of not having to carry that immense basket of wet clothes around. We farm women are having more and more of the outside chores to do."—MRS. MARTIN GRAHAM, R 3, Yukon, Okla.

3. "Permit the use of welders during off-peak hours just as water heaters are used, or use them on a double-throw switch with a range so that not both are on at the same time."—WM. H. SKINNER, Narberth, Pa.

4. "I suggest a manure loader to be used inside a cow shed that would tear apart tramped manure so it would be easier to unload. My idea would be a spiked pick-up drum with an elevator to put the manure in the spreader." Also

5. "A one-man farm dehydrator to handle chopped hay, damp grain, shelled corn and soy beans." — HUBERT BURKHOLDER, RR3, Edon, Ohio. (Sketches sent)

6. "For six years—ever since we have had electricity—I have wanted an electric rat killer—one that is safe."—MRS. MINNIE L. GORDON, Rt 4, Marysville, Ohio.

7. We could use a super-efficient egg cleaner and it would certainly be a pleasure to find a way to candle a filler of eggs at one time." Also

8. "It would be a good thing for farmers who plow at night to have some thing to get rid of insects. Mosquitoes are the worst pest for my husband."—MRS. WILLARD LYNCH, Zumbro Falls, Minn.

9. "It would help me if there was a waterproof heating cable similar to soil heating cable which could be supplied in 3 foot lengths using 25 watts and 10 and 20 foot lengths of low wattage for attaching to short sections of pipe to keep them from freezing. —CHARLES CLARK, Germantown, Md.

Lead covered heating cable was made a number of years ago in different wattage ratings but the company had no distribution outlets to farmers.

10. "Why not a power vacuum cleaner for poultry houses with a four to six inch suction to handle saw-dust, peat moss, rice hulls or other litter?"—PAUL T. OESER, Winchester Hatchery, San Jose, Cal.

11. "Mice like to build nests in the motors on my feed grinder and water pump. I've also heard that oil-well motors around here are frequently damaged by field mice, and even rats. The air vents in the ends of my motors are just big enough to let a mouse run in and out. Would it be possible to screen those vents from the inside when the motors are being put together?"—VICTOR BOELLNER, R 2, Leon, Kans.

12. "I have been trying to obtain an electric heating element to place under a vacuum feed hog waterer which now uses an oil lamp, which is not safe."—C. S. FRIAR, Gibsonburg, Ohio.

13. "Welcome both on farms and in town would be a power attachment for a hoe, rake, fork, or spade for working up small gardens and flowerbeds." Also

14. "A boon to mankind would be a device to electrocute rats." —MRS. MARGARET BISHOFBERGER, R I, Medford, Wis.

There are no commercial electric

SUGGESTION FORUM AWARDS

Each person who submitted a suggestion which we considered to have merit — provided any equipment suggested was not previously available — has been sent $1 in war stamps for each suggestion.

The $25 War Bond goes to Mrs. Mearle Rhinesmith, Wanaque, N. J., for her suggestion of an approved electric pasteurizer for small dairies.

garden tractors on the market but a number have been built experimentally. See EOF (ELECTRICITY ON THE FARM) April 1940; p 13; Roy White of the Detroit Edison Co. built a successful 1-hp electric tractor which has been used on a truck farm for many years; the Univ. of California and the Puget Sound Power & Light Co. have both experimented with small electric garden tractors.

15. "We would suggest a machine similar to a cream separator containing germicidal lamps over which milk could be run in thin streams and come out still raw milk but purified from disease germs and bacteria and with all its original vitamins and possibly some added. It would be better than present pasteurization."—EVA M. APPLEBAUGH, Coffeyville, Kans.

A New Jersey inventor patented a milk sterilizer made of germicidal lamps several years ago. See EOF June '39, p 26. It was used something like a milk cooler. It was never manufactured and we have heard nothing of it during the war.

16. "I believe an electric grain blower could be made to take the place of a lot of scooping of grain and corn on the farm. The blower should be on the motor shaft and the blower with a hopper mounted on a low two-wheeled truck that would go under the endgate of a wagon and handle what two men would scoop."—A. O. WEINHOLD, Waco, Neb.

17. "Is it possible to make a grain blower on the order of a vacuum cleaner, one hose to draw in the grain and the other to deliver it into the bin?"—SAMUEL KRILL, R 3, Bryan, Ohio.

18. "Why can't a farmer's wife have an electric garden cultivator? And also an electric bread mixer?"—DOROTHY HOCKER, RD 2, Montoursville, Pa.

Bread mixers have been made for a long time. Perhaps they have been a little elaborate and costly for farm use.

19. "We have grain and ear corn elevators but need a baled hay handler. I am going to have one that will do all three jobs. It will be like an ear corn elevator but 15 inches wide to handle a bale of hay. In view of the number of pick-up hay balers being used, other farmers are going to be thinking of similar equipment."—C. B. COPELAND, The Beim Farm, Kimball, Minn.

There are a number of manufacturers of farm elevators, some of which might do this job. Few, if any, elevators are designed particularly for electric operation. The manufacturers have not been awake to this electric market.

20. "I suggest a two-wheel type garden tractor capable of handling cultivating shovels and weeders and also the lawn mower."—TOM MILLER, Palmyra, Ind.

21. "The Army Engineers' Corps have a large motor-driven air compressor mounted on a truck with numerous pneumatic tools, such as circular saw, chain saw, drill, clay spade and air hammer. Why not a small portable electric compressor for the farmer with the same tools but on a smaller scale? In addition there could be a paint sprayer and greasing outfit."—LT. O. O. SABEL, 350th Engrs., APO 717, San Francisco. This suggestion came by "V" Mail from overseas.

22. A large capacity, low powered ensilage cutter designed especially for electric operation, possibly with bucket elevator in place of a blower, the bucket elevator to be used also for grain and corn.—EDITOR.

Suggestions for Home Equipment

23. "What the homemaker really needs is compartments in the bases of toasters, hotplates and waffle irons into which to slip the electric cord and plug for storage."—MRS. EDITH BLACK, St. Jacob, Ill.

24. "A one-plate round oven for canning. Size 4—1 quart jars, with glass cover and designed so filled jars can be placed directly on floor of oven. Temperature range 200°-350° with time control to turn to low heat. Durable but not fancy. More economical than pressure cooker; safer to use; products safe. The 200° step is necessary to keep food from boiling out. Vacuum lids seal tight."—MRS. ELMER NELSON, Cornell, Mich.

25. "A new electric canner, either hot water or oven type with *some good instructions* on oven canning. Personally I think steam pressure canning is a slow process—getting the pressure correct, then holding it, and cooling it down is nerve wracking. I have canned chicken, pork, beef, peas, corn, carrots, asparagus, peaches and pears in my electric oven with great results."—MRS. JOHN J. DOEBERT, Ogden, Kan.

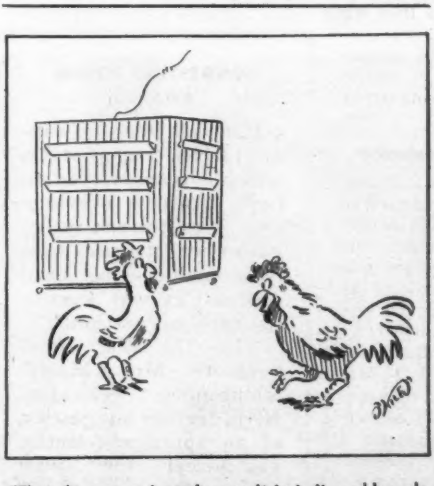
26. "If they would make an ice-cream freezer to work on the same principle as a refrigerator, so as not to use ice, more farmers would buy them. The trouble is now they have to run to town to buy ice."—FRANK LAZARONE, Rt. 1, Box 58, Hearne, Texas.

27. "I suggest the manufacture of a combination churn and bread dough mixer with either a built-in or portable motor."—R. C. HUGE, RR 1, Knox, Ind.

28. "I would suggest an automatic electric canner—one that would hold 8 or 10-quart cans and with an automatic switch so we could put the water and cans in the canner, set the switch and go on about our other work without having to watch the clock, put wood in the stove and wonder if we will ever get done."—MRS. H. H. SWINNEY, Fries, Va.

(Part 2 will follow in May.)

(More on page 24)



"That thing must be unhappy. It just sits and broods all the time."

HOW TO SHEAR SHEEP

To begin shearing, set sheep squarely on rump and hold firmly between knees. Make first strokes downward from brisket as shown. After shearing brisket, curve sheep's body to left by pulling up on right foreleg and pressing against body with left knee. Run three or four strokes down from under right foreleg to flank to open a starting place for strikes across belly. Do not hurry.

Set sheep farther back on rump and hold right foreleg under your right knee. Remove body wool with nearly straight-around strokes across belly.

Now turn sheep slightly to right as shown and with left foreleg under arm, grasp and twist a handful of skin and wool on front side of hind leg at flank joint to keep leg in position for shearing. Never grasp foot to pull leg out straight. Shear inside of right leg from foot toward tail.

To complete crotching out, roll sheep over slightly on right hip and shear inside of left hind leg with strokes out toward hoof. Now put sheep in position shown and run two or three strokes from left hind foot into flank. All following strokes should run in on leg, curve down and end near backbone above tail base. Continue strokes until leg and hip are cleaned.

Straighten sheep on its rump. Press right knee firmly on sheep's brisket between forelegs while left leg acts as support. With left hand on jaw, bend sheep's neck around left knee and open up neck with stroke from brisket to jaw and several strokes on right side of neck. Roll up sheep's head to shear left side of neck, continuing strokes to left jaw, side of face and top of head.

Shear left shoulder and foreleg in position shown in this sketch. In shearing shoulder, all strokes should run toward back, but not entirely to backbone. Every stroke should end with comb teeth well down on skin to avoid need of making second cuts. After left foreleg and shoulder have been sheared, grasp left foreleg and lay sheep down almost squarely on back as shown in next picture.

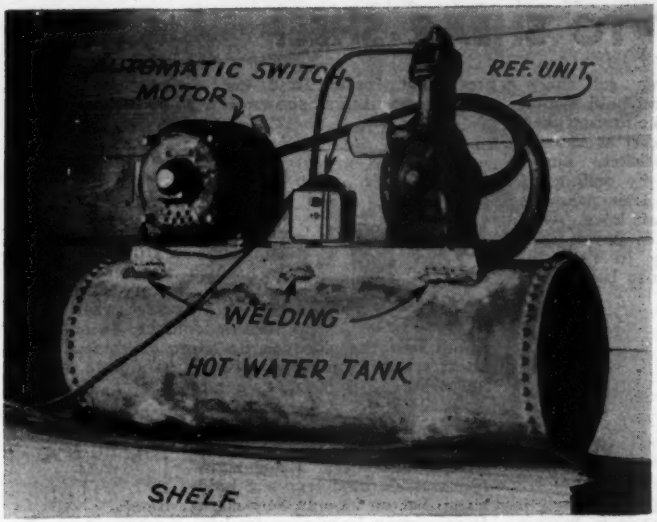
In this positioin the left side can be sheared. Press left foreleg down against its head and with left arm and right foot, hold the sheep's body curved around your left leg which tightens skin on left side making it possible to shear side with long strokes from hip to shoulder. About half the side can be shorn in this position. Shear leisurely, making sure the handpiece cuts its full width.

Keep left leg in front of both forelegs, with foot well under sheep's shoulder. Place right foot outside hind legs and hold sheep flat on its side with right knee resting lightly on its hip. Force the sheep's head down gently to the floor and finish shearing left side, then take one or two strokes beyond the backbone, the whole length of sheep's back and neck, ending strokes near right ear.

Leave sheep lying flat on side. Raise head and shear right side of head as shown. In this operation bring right foot forward close to back and even with shoulders. Shear right side of neck with strokes running down to shoulder. As neck is shorn, hold sheep firmly between legs, rolling it into a more upright position as you shear downward. Sheep's head is lying on its left side as you start to shear shoulder.

As this picture shows, the sheep has gradually been brought to a nearly upright position. Shear right side of shoulder and continue with strokes from near the back around across right side until wool is removed down side to right hing leg. As last stroke is being made, raise sheep's head and let body settle down on left side. Shear the right hind leg, starting strokes near backbone and running them well out on leg. As shearing continues toward tail, sheep is let down flat on left side.

The last step. Hold sheep's head over against its right side, and keep hind leg straight by pressing hand in flank. Do not pull hind leg out with hand. With its leg held straight, the sheep cannot yank leg back against comb teeth. After sheep is shorn, spread out fleece, flesh side down, to resemble sheep's skin. Put belly wool in center, fold in sides, and roll from each end. Tie with paper twine.



Home-Rigged Portable Air Compressor

This air compressor is on the farm of Earl Bailey & Sons in Lake county, Indiana. It is made from an ordinary hot water boiler tested for 150 lbs. pressure, a compressor from an old refrigerator and a small single phase motor. Angle irons are welded to the under side of the tank to make it stable and to the upper side to support the motor, compressor and pressure switch. The automatic switch was adjusted by an electrician to cut off when there is 80 pounds pressure in the tank, and cut in when the pressure drops to 60 pounds.

The compressor is kept in the garage where it is used most. But if a tractor or truck tire goes flat in the field, the tank with pressure up is loaded into a light truck and taken to the rescue. It contains enough air to inflate several tires and beats pumping them by hand.

Baby "Makes it Do"

By CAROLINE COLEMAN

These are times when young mothers have to use their wits, yet despite the fact that utensils and electrical equipment are almost impossible to obtain, mothers are carrying on with what they have.

One young mother I know has had to change from one large city to another, sometimes living in one room, sometimes in an apartment, and still other times staying in a country home. She couldn't get the convenient little gadget, a bottle warmer, and here is how she has "made things do." The base of an electric coffee maker, plus a small sauce pan which fits the base does the job of warming bottles. Set the base on bedside table, place on it the sauce pan and a little water, have a convenient extension cord and it is a moment's work to heat the 2 A.M. bottle. Everywhere this mother goes, along goes the little base heater and the sauce pan.

And the glass coffee maker itself is now used to boil water for baby's bottles. Once a day water is boiled in the glass pot, stoppered and kept ready for use. Just one more utensil completes baby's "kitchenette," a larger covered sauce pan just the size for holding several bottles. The bottles are boiled, sterilized in this latter which is placed over the coffee-maker base. Being large it takes longer to come to a boil, but it boils. "The electric coffee maker was one of my wedding gifts, and little did I think how useful it would be," said the baby's mother.

—I'm proud I am a farmer!—

Growing Sweet Potato Plants Electrically

Dr. J. B. Edmond of Clemson College, S. C., gives some interesting information on the growing of sweet potato plants in electric hotbeds. Since he is in the heart of the sweet potato growing area, he should know how best to do it.

Glass or glass substitute covers on hotbeds are considered too costly in South Carolina, and they call for careful ventilation of beds—which few beds get. The cover that has been best is made of waterproof fertilizer sacks and muslin,—the muslin over the frames and the sacks on top. They give good protection from rain and cold and they are "ventilation proof." The sacks should be taken off the beds from about 10 to 4 each sunny day and from 10 to 7 in late season.

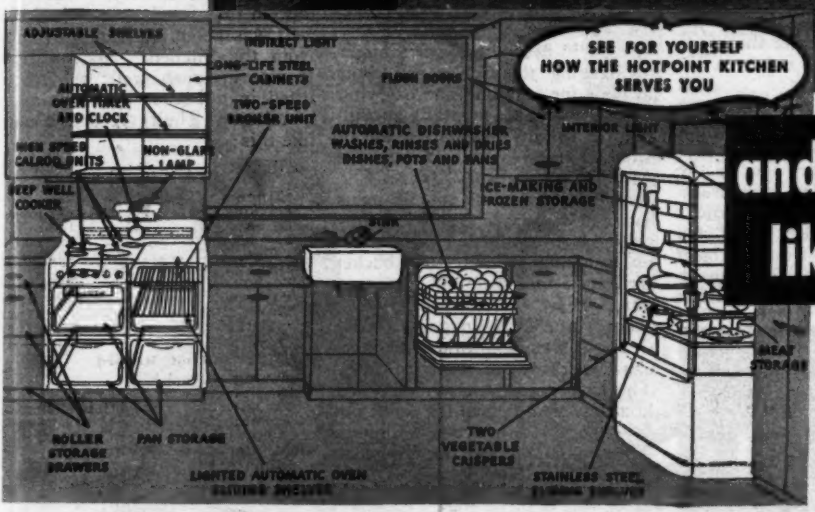
The best place for the heating cables was 1" below the ground surface on which the potatoes are bedded. The most plants were secured when the cables were 6" to 7" apart, but counting cost of cable against plant production, a spacing of 9" to 10" was best. The best temperature for the rapid plant growth which is desirable was 85°. It should be no lower than 80°. Soil was better than sand or sawdust for bedding.

An important discovery was that the potatoes could be double-decked in the bed, one set of roots being placed immediately on top of the first layer. In single layering 150 roots were placed in 36 square feet; in double layering, 300. Some of the potatoes touched but there was no difference in rotting. All were treated with corrosive sublimate. By double decking, just twice as many plants were grown in the same bed with the same heat. There was no difference in the plants, the same number and same weight per root being grown. 2000 plants per bushel were grown under the best conditions and it took 17 kw-hrs per 1000 plants to grow them.

Knows His English—*Dimchurch*: "You're not very bright. Let's hear you give me a sentence with the word biennial."

Bungwit:—"Sure I can—My wife will biennial thing that only takes a few ration points!"

Your next Kitchen can LOOK like this



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YES, IT'S TRUE! Your dream kitchen is almost a reality. That Hotpoint Electric Kitchen you and Jim have been saving War Bonds for will be priced so reasonably even modest farm incomes can afford one.

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ELECTRIC **Hotpoint** KITCHENS

Electrical Housekeeping

Edited by **GAIL MEREDITH**

Water from a Well

A COUPLE of years ago when Miss Adele Bigelow, Rural Home Counselor for the Monongahela West Penn Public Service Company, was making a study of the time and money and effort it takes to do some of the jobs that might be done with electricity, she found two families in her territory willing to measure distances and count trips and make note of the number of pails of water that were carried around their farms in six months time.

The E. R. Seamans of Roane County undertook such a study of their water supply in August two years ago. There are four in the Seaman family. They were drawing water hand over hand from a 55-foot well, 15 feet from the house, and 150 feet from the barn and poultry house. They found, as the figures below show, that it was taking them 96 eight-hour days each year to draw and carry the water they needed.

Work Record—Year

Distance walked		125½ miles
Water carried	gallons	15,042
	Tons	62.4

Time Record

Carrying water
769 hours 54 minutes
Turning stock out of barn, etc.
121 hours 12 minutes
Cost—769 hrs. 54 min. @ 10 cents an hour..... $77.00

Charging themselves ten cents an hour for pumping and carrying water was a modest enough charge, by any standards, but it brought the yearly cost up to a tidy sum at that. $77.00.

By the next June the Seamans had a new electric pump and they set out to make a comparison between pulling up water in a bucket from a 55-foot well and turning a faucet to let water run of its own accord into kettles or pans.

There was no work record because there was no water to carry. The time record showed only the hours needed to turn the stock out to water, 110 hours 49 minutes. This was about ten hours less than the job took the old way. The 96 eight-hour days formerly spent drawing and carrying water were clear gain.

With water at hand, the Seamans used at the rate of almost 5,000 gallons more a year than they had before.

The cost of operating the electric pump, 52 4/5 Kw-hrs at three cents a kilowatt-hour, was only $1.58. That's for a year, mind you.

The same kind of comparison was made on the M. C. Friel farm in Pocohantas County. There are four in that family, too. And the well was about the same distance from the kitchen. Sixteen feet. It was an open well; the water lifted in a bucket by cranking a windlass. Their records were like this:

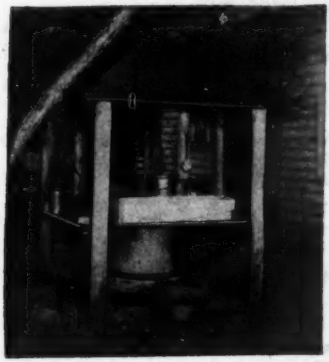
Work Record

Distance walked—	
To house	43 miles
To barn	142 miles
To chickens	50 miles
Total	235 miles
Weight of water carried—	
To house	73½ tons
To barn	12 tons
To chickens	8 tons
Total	93½ tons

Time Record

Carrying water—	
To house	118 hrs. 16 min.
To barn	110 hrs. 30 min.
To chickens	44 hrs. 36 min.
Total	273 hrs. 22 min.
Cost Record — 273 hrs. 22 min. @ 10 cents an hour	$27.34

After the electric pump was in-



Above: This was the Friel water supply before the pump was installed. Picturesque is one word for it; time-killer is another.

Right: The M. O. Friel kitchen after the water system was installed. Note the water meter and electric meter installed for the purpose of this study. A homemade cabinet is to be built around the pump and sink. This pump is a small size, suitable only for a small farming operation.

Make it more than

WISHFUL THINKING

U plan for V day

Naturally, you want a perfect home after the war, efficiently equipped with the wonderful household devices that make work so easy. The "U" Plan for "V" Day brings this wish out of the dream stage into reality! Here's how it works: . . . (1) Check on this page the Universal housewares you will need . . . (2) Add up their estimated values as shown here . . . (3) Put that sum into War Bonds . . . (4) Take the check list to your local dealer today and ask him to put you on his priority list.

Put yourself in line among the lucky "firsts" to get Universal products after Victory! *Send for the "U" Plan for "V" Day Booklet which gives added details — write to Dept. EFA.*

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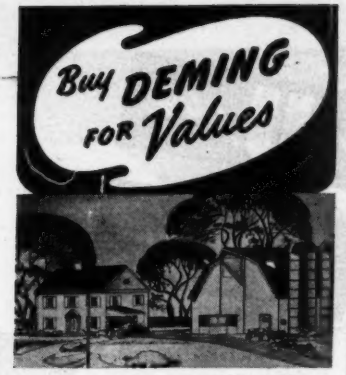

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Two Models
275 gallons per hour
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Note these features: QUIET operation assured by rubber cushions between pump and sub-base; Timken Roller Bearings on crankshaft; Ball Bearings on crank end of connecting rod. Other important features include *sectional construction* insuring low costs for repairs or replacements after long service; positive lubrication at each stroke of pump; automatic double pole pressure switch with thermal relay for *overload protection* of motor; *many other features!*

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stalled, there was no more time or work involved in getting water to the house or barn, but the chickens were beyond the pipe line, so carrying water to them still went on. The cost of pumping for them was small but the labor of carrying water was still considerable.

Work Record

Carrying water to chickens 50 miles
Weight of water carried.. 8 tons
Time Record .....42 hours

Cost Record

16 kwh @ 4c a kilowatt hour	$ .64
42 hours work @ 10 cents an hour	4.20
Total	$4.84

The water meter on the pipe leading to the house showed that there were 113 4/5 tons of water used in the house. With water on tap the amount used in the house jumped way beyond the total for house, barn and chickens when the water had to be carried.

A Way With Dirt

Next to new things to eat, new ways of doing our everlasting cleaning are of absorbing interest to those of us who keep house. There are always new things to learn; and that is even true of a vacuum cleaner. We may have been personally acquainted with them for a quarter of a century and still keep learning something new about using them.

I had used a vacuum cleaner a good many years before I learned that just rambling over a rug at random, pushing the cleaner here and there, might make the rug look better, but it didn't really get it clean. I didn't know that hurrying it slambang over the rug didn't do the work either. Laboratory studies in the use of equipment have taught me a good many things I need to know to get the best results from my cleaner. Maybe they will help you, too.

The surface litter and dust come off easily, but it takes time to get out the dirt that sinks down into the pile of the rug. The nozzle of the cleaner must be adjusted to the thickness of the rug you're cleaning. If you use a cleaner that depends on suction alone, the edges of the nozzle

should form a good seal with the rug. In cleaners with motor driven brushes or agitators, the adjustment is usually right when

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HANDY WATER FOR STOCK
•
ADEQUATE FIRE PROTECTION
•
WATER EVEN IN COLDEST WEATHER

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IXL PLATE 130

there is suction enough to lift the rug up against the nozzle.

There is a trick to cleaning the edges of a rug that I never learned by myself. When you are nearing the edge, keep most of the cleaner on the rug. If you run off the edge and push the cleaner along, part on, part off the rug, with even so little as a quarter of the nozzle on the floor, you'll find you won't get that last strip of rug clean. The air goes swooping up through that part of the nozzle that is free of the rug, and does not go through the fabric to carry out the dirt.

Some women use the vacuum cleaner on their big rugs and

Cleaning Small Rugs

shake the small ones over the porch railing. That's wasting woman power and shortening the life of those small rugs. They aren't hard to clean if a body gets the trick of it, if you'll just stand on one end of a small light rug when you begin to clean it, you can keep it under control. Run the cleaner over it and off the far end. Way off. Then lower the handle, lift the nozzle from the floor, and wheel the cleaner back to start over. Don't try any back and forth cleaning on these rugs. One way traffic only. And remember to push the cleaner off the far end.

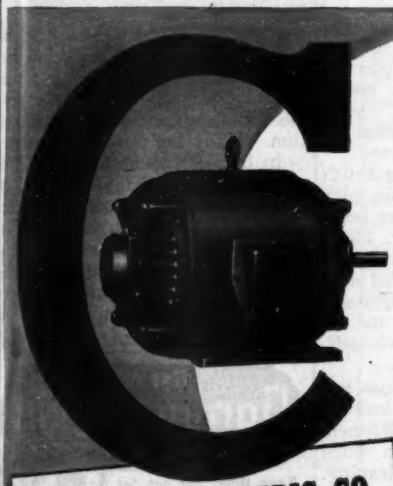
Sometimes a vacuum cleaner seems possessed to gobble up the fringes of a rug. If yours does, try combing the fringe out this same way—by running the cleaner over it and off the ends. The fringe will lie flat and smooth.

Whatever your policy used to be in regard to making a preliminary survey of the floor for nails, bobby pins, or tacks, that scouting trip is grimly necessary now. You can't afford to risk having a sharp piece of metal poke a hole in the bag, actually cut the belt, or nick the fan.

Have you noticed how they pick up hairpins in beauty parlors since hair pins got scarce? That toy magnet on the end of a stick? They have something there. If you had one, you could push it back into corners and under furniture where you can't see the floor, as well as out in the open where nails or safety pins are plain to see. A metal picker-upper like that is pretty good appliance

insurance, and saves a lot of stooping and bending.

I don't know what your theories about dusting are. Perhaps you use cheese cloth or the ragged remnants of a pair of undies, or



Lick Your Man-Power Problem

With the Horsepower of

CENTURY RS Motors

The tough jobs — on thousands of farms — formerly requiring hand labor, are seldom thought of as such since Century Motors were installed.

They're especially well adapted to farm use—developing high starting torque to start the toughest loads, yet using less starting current and producing least light flicker.

Century Type RS Motors will stay steadily on the job —serve you 24 hours a day—no matter what the task required. They'll help you to produce your increased quota of "Food For Freedom" when faced with a shortage of farm labor.

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MORE WOOL
MORE PROFITS
LESS LABOR

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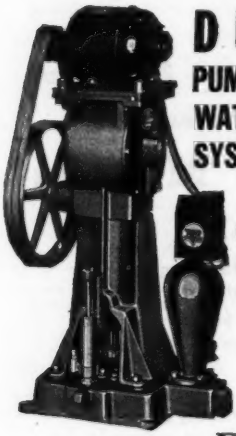

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New DURO Water Systems now available.

THE DURO COMPANY
DAYTON, OHIO

maybe you dust with the dusting paper that dusts and polishes at the same time, and crumples up into a ball you can throw away. But properly managed, your cleaner can do a good deal of your dusting for you.

There is an oval dusting brush that will sweep down walls, pick up curls of gray fluff under beds, or clean the linoleum floor. There is a brush for fabric covered furniture, a little wide mouthed nozzle for draperies or furniture, and a round brush, soft as the ear of a Persian kitten for delicate lamp shades.

If your davenport cushions are filled with down, brush them by hand instead of cleaning them with the cleaner. Down filled cushions resent vacuum cleaning. The long narrow lipped tool designed for cleaning radiators is grand for getting into any corners where dirt collects. They do say it keeps down moth damage considerably if you will use it around all the crevices in closets where you store woolen blankets and winter clothes. It takes up the wool lint and moth eggs and larvae from these trouble spo and forestalls damage.

If the suction seems poor, a the cleaner is not picking up t dirt as it should, make sure t bag is clean. Even though y do think you have been emptyi it often enough, give it a chec because if the fabric is clogg with dust, air can't get throug Empty the bag and turn it wro side out. Fasten it to the cloth line and brush it vigorously wi a whisk broom. Or hang it reach of a convenience outlet a go over it with a hand vacuu cleaner. Never wash it; if it ge impossibly dirty, replace it— you can.

If your cleaner doesn't pick u threads or leaves dog hairs o the rugs, look over your brushe The brushes may be badly wor That calls for adjustment so th shortened bristles can reach th rug, or if they are very bad, fo replacement.

While you have the nozzle o the cleaner turned upside dow pull off strings, hair, or lin wound round the brush bearing and from the brush itself. An see that the belt is properly tigh if it isn't, better get a new one.

Agricultural Engineering i Russia's first Five Year Plan ha had much to do with Russia's wa effort. Formerly 85% of the peo ple were engaged in food produc tion. Many are now in the army

In the United States only 20% of the population is engaged i agriculture. Thousands of farm ers from this 20% are now in th armed services and in war plants Yet the 1943 production wa among the highest on record.— Prof. J. B. Davidson, Iowa Stat College.

Get A
Gardner Hi-Line Controller

Save time, get set for more milk, beef or pork production with a Gardner hi-shock hi-line controller — the best engineered electric fence unit. Thousands are in nation-wide use, many have given six years of successful service. Ask your dealer today, or write direct for free folder.

Gardner Mfg. Co.
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For Sale Now!

Last Year's Beans

"New Dishes beget new appetites."
—Benjamin Franklin

"THERE'S a lot of our Victory Garden still in the basement," said one of our neighbors, leaning over the fence to talk to us as we worked in the warm April sunshine.

"There should be," said my husband, straightening up, and rubbing the warm, brown earth from his hands. "It will be a long time before we eat from this year's gardens."

"I know, but it seems to me that every other can I have left is beans; and the folks get right tired of beans day after day!"

Without doubt a dish of green beans, hot from the kettle, well

seasoned, and gleaming with a last minute dab of butter, can scarcely be improved upon. Unless you think that a fine sprinkling of crushed bread crumbs fried crisp give just enough variety in texture to improve the eating.

But folks will tire of beans no matter how good they are if they look and taste the same every time they come to the table. There is an advantage in being able to coax variety from a can of beans by trying some recipes like these.

Au Gratin

Spread the beans in a shallow baking dish and pour over them a thin white sauce with cheese added. One cup of cheese to about two cups of sauce gives a yellow, nippy sauce, but if you can't spare the points, use less. Cover the beans with bread crumbs and specks of butter, then bake until bubbles gurgle up through the sauce and the crumbs are toasted brown.

Beans and Tomatoes

Drain the liquid from canned beans and put them in a shallow casserole. Cover them with tomato sauce and buttered bread crumbs, mixed with some grated cheese. Bake in a 350 degree oven until the sauce is hot and the crumbs toasted.

Beans and Bacon

Cut three slices of bacon into small pieces, cook until crisp, and take out the bacon. Slice half an onion and brown the slices delicately in the fat. Add four cups of canned beans, heat them through, seasoning them to your taste. Turn them into a serving dish and spread the crisp bits of bacon over the top.

Two years ago at Farm and Home Week at the University of Wisconsin, I picked up this recipe which sounds like a meal-in-one.

Old Fashioned String Beans and Bacon

1 can beans including liquid
2 medium potatoes, cut in ½ inch dices
1 medium carrot cut fine
¼ pound sliced bacon, cut small
¼ teaspoon salt
few grains pepper
1 small onion, sliced
½ cup water

Brown the diced bacon well. Drain the liquid from the beans, combine with the water and bring to a boil. Add all the ingredients

210 MILLIONS OF HOURS PER YEAR SAVED BY MILKING MACHINES

Says Bureau of Agricultural Economics of U. S. Department of Agriculture

MILKING MACHINES CALLED "WAR TOOLS"—USED MORE HOURS PER YEAR THAN ANY OTHER FARM MACHINERY

RECOGNITION of the very important part that milking machines are playing in the war effort now comes from an important Government source which in the January 1944 issue of "The Agricultural Situation" published by the Bureau of Agriculture of the U.S.D.A., says in part: "Milking Machines have played an important part in helping dairy farmers increase wartime production to peak levels. . . . They have taken the place of men who went to war and helped those who lacked physical strength and experience to milk by hand. Without these machines many dairymen would have long since reduced their cow numbers. . . ." The report also goes on to say: "With the machines in use in 1943 labor needs for milking were at least 210 million hours less than would have been needed if all milking had been done by hand" and, "Annual average usage of milking machines in 1944 was estimated to be 684 hours per machine. This is higher than other important farm machinery."

We are proud of the part De Laval Milkers are taking in this great effort. There are still many dairymen who need De Laval Milkers and we are doing our utmost to supply this urgent need.

DE LAVAL *SPEEDWAY* MILKING SAVES ADDITIONAL TIME

Even greater savings in time can be made by milking machine users by adopting the De Laval Speedway Method of Fast Milking —frequently as much as half the time is saved as compared with older methods of milking machine operation. In addition, improved udder health, more and cleaner milk are usually obtained. The method is so simple that dairy farmers can use it with any make of milker, *but it works best with a De Laval.*

Ask your local De Laval Dealer about Speedway Fast Milking.

THE DE LAVAL SEPARATOR COMPANY

NEW YORK 6 — 165 Broadway
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SAN FRANCISCO 19 — 61 Beale St.

except the beans and boil until the potatoes are soft. Then add the beans and cook another five minutes.

When hot dishes pall, there are many salad combinations that will take the beans to the table with a tangy, different flavor that gives them new popularity. Have you ever tried canned string beans with diced cooked carrots, chopped celery and celery seed?

Using Your Roaster

1. Attach the roaster cord first to the roaster, then to the wall outlet. Make sure it is firmly connected at each end. Never try to heat the roaster by attaching it to a drop cord from the ceiling or to an extension cord added to lengthen the distance between the roaster and the electric outlet. Neither a drop cord nor an extension cord is designed to carry the amount of current you need to heat the roaster. Do not connect other appliances to the same circuit while the roaster is on.
2. Use the inset pan for all preheating and cooking except perhaps roasting a large turkey or canning quarts of fruit. For cooking small amounts use any convenient pan that will hold the food. Set that pan inside the roaster with the inset pan in place.
3. For baking, preheat the roaster. Set the dial at the desired temperature; plug in the cord, and wait till the signal light goes out, showing that the required temperature is reached.
   Keep the cover on as much as you can. Time the cooking. Lifting the cover lets heat out and slows down the baking. It interferes with browning, too.
4. Before you call a service man to tell him your roaster is out of order, make sure the dial on the thermostat does not show Off; make sure that the cord is plugged in firmly so the connection is complete; and check to see that the thermostat is set right for the cooking you want to do. Neither too low nor too high.

Patterned for Smartness

Pattern 4635 . . . A collarless two-piecer with flattering softness in front. Sizes 12 to 20, 30 to 48. Size 36 requires 3¾ yards 35-inch fabric. 16c.

Pattern 4636 . . . Casual shirtwaister with deep, plunging neckline and set-in waistband. Sizes 14 to 20, 32 to 42. Size 16 requires 3⅝ yards 39-inch fabric. 16c.

Send orders with coins enclosed to ELECTRICITY ON THE FARM, 196 Pattern Dept., 243 W. 17th Street, New York 11, N. Y. Allow plenty of time.

GRIND YOUR OWN FEED
WITH A VIKING HAMMER MILL

Save WORK TIME - MONEY!

SAVE WORK—just fill the hopper and snap the switch. It grinds automatically while you do other work.

SAVE TIME—save waiting for the grinder truck to come around—or save hauling feed to town and back again.

SAVE MONEY—grind for as little as one cent per 100 pounds! You'll have fresher, BETTER feed when you grind your OWN.

RIGHT NOW—a few Viking Mills are being made. Get yours, no priority needed. Write TODAY for full information.

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Designed and Constructed for Dependable Results

Our aim is to produce Equipment that will SAVE LABOR and DO A BETTER JOB AT LESS COST WITH ELECTRICITY. We invite your inquiry.

THE TRUMBULL ELECTRIC MFG. CO.
1012 Woodford Ave., Plainville, Conn.

Electrite FENCE CONTROLLERS

NOW AVAILABLE! As low as 9.95

ELECTRITE FENCERS produce greater shock with less current. Approved by Ind. Comm. of Wisconsin.
Manufactured by
ELECTRITE FENCE CO.
WHITE WATER, WIS.

Electricity Extends Doctor's Usefullness

Mr. Walter S. Cauthen, Supt. Lynches Rural Electric Co-op., reported at a recent South Carolina Rural Electrification Conference the experience of a physician in his territory. The doctor was Dr. D. C. Griggs of Pageland, S. C. He gave it as his opinion that the incidence of diarrhea in the community, which was a most prevalent ailment, had been reduced at least 75 percent since the coming of electricity. Diarrhea in that area is caused mostly by spoiled milk. Electricity, with its accompanying refrigeration, has enabled the people to take better care of the milk in warm weather. With lights in the homes, running water and refrigeration, the doctor says he is able to take care of 30 percent more practice in the rural areas than formerly.

Underwriter's Laboratories 50 Years Old

"The Code" and the "Underwriter's Laboratories Approved" label are familiar expressions to readers of ELECTRICITY ON THE FARM. The "Code" is a book of safety rules for electric wiring, being regulations of the National Board of Fire Underwriters. The electrical wire and fittings for safe wiring must be inspected and approved by the Underwriter's Laboratories.

The Laboratories' motto "For Service—Not for Profit," and its objective, "to reduce the danger to life and property" give a brief but eloquent statement of its purpose.

In 1893 when Edison's new incandescent lamp was getting its first big showing at the Chicago World's Fair and the "new fangled" lighting was causing some fires, William H. Merrill rode the fire equipment to study what caused the fires. About the same time acetylene lighting was coming into vogue, and the many generator explosions called for some laboratory research. The following year—50 years ago—with these two problems as a nucleus, Mr. Merrill's Chicago laboratory was made the official testing station of the capital stock fire insurance business, represented by the National Board of Fire Underwriters. Since that time more than 375,000 products have been tested and approved by Underwriter's Laboratories and there are large testing stations in Chicago, San Francisco and New York. The testing is done for manufacturers, but the Underwriter's label has become the public's signal of approved safety.

Kept the Car Battery Charged

As "A" card gas would not run the car enough to keep its battery charged, the fan belt drive was taken off the car generator and a ¼-hp utility motor belted to it. Running it an hour or two every week keeps the car always ready for use.—H. E. Gholson, Teacher of Agriculture, Clarksville (Tenn.) High School.

"What's the matter, Mary?"

"I've got rheumatism in my muscles."

"You ought to visit a masseur."

"What's that?"

"A man who pinches you all over."

"Oh, you mean a marine!"

Dollars Don't Come Easy!

NOT on a farm, they don't! You earn every one you get!

And right now you need *extra* time and help to earn those *profitable* dollars. And . . .

That's where a Fairbanks-Morse Single-Phase Motor can help you—*plenty.*

It is a reasonably priced, dependable, general purpose motor that delivers low-cost power for all those extra time-consuming jobs around your place. It is one of the most timely and profitable investments you can make today.

Ask your dealer about Fairbanks-Morse Single Phase or Polyphase Motors, all sizes, or write Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

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Remember the LYON Line
when you want quality and time-saving advantages.

28 YEARS OF SPECIALIZATION IN *ELECTRIC* BROODING

FIRST in successful *nation-wide* electric brooders
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FIRST in *electrifiers* for homemade brooders
FIRST in *low temperature coils* for accurate temperature control in incubators and brooders
FIRST in *dimmer resistors* for poultry lighting
FIRST in *sturdy fly electrocutors* for poultrymen
FIRST in an *inexpensive 12 amp thermostat* for food dehydrators (130°-200°)
FIRST in special electric *burglar alarms* for poultrymen
FIRST in *dust-proof self-cleaning* fan heaters for electric brooders
. . . *AND NOW*
FIRST in *electric De-beak-ers* for more efficient poultry feeding and elimination of picking

Ask leading poultrymen from Coast to Coast . . . or write for catalog EF

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Headquarters: SAN DIEGO, CALIFORNIA
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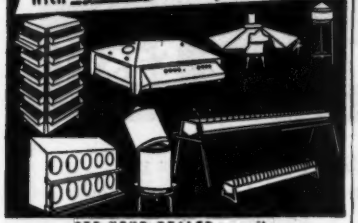
EASIER • FASTER • MORE PROFITABLE with *Cyclone* Poultry Equipment



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The CYCLONE MFG. CO., URBANA, IND.

SANI-MATIC
ELECTRIC WATER HEATER FOR THE MILK HOUSE

Exclusive Advantages:
● TEN FULL GALLONS* of HOT WATER available THREE TIMES DAILY and the LAST DROP is as HOT AS THE FIRST.
● EASY ACCESS FOR CLEANING.
*Also 18 Gallon size available.
Write today for descriptive folder.

THE SCHLUETER CO.
JANESVILLE, WISCONSIN

Suggestion Forum

. . . . . (More from page 12)

29. "I can think of nothing I would rather have than a laundry drying cabinet—something with a circulating warm air current so clothes would dry quickly and not have that 'dead air smell.' Trudging out to the clothes line in zero weather, then bringing in frozen clothes to drape over the furniture with half frozen fingers is no fun. And many times a planned schedule is disrupted waiting for a suitable day."—JUNE BETTY HELSEL, RR 2, Keokuk, Iowa.

If not quite the practical type for the farm, there have been electric driers on the market. See EOF Feb '40, p 26; Oct '41, p 30.

30. "A home locker constructed so that all types of food would be available without removing large quantities of frozen food."—MRS. J. A. SAMELSON, Oregon, Ill.

Farmers Test Flying Suits

The electrically heated flying suits made by the General Electric Co. must be able to "take it." The suits are worn in the extremely low temperatures of high altitudes and must be light and comfortable enough to give the flier freedom of action as well as warmth. The warmth comes from a special generator in the plane connected to heating wires through the fabric of the suit. To test the reliability and durability of the suits in case a flier should have to land in the jungle, tests were made on some tough mountain trails hiking, skiing, working and camping out. Several farmers also wore the wired suits, shoes and gloves for several months of farm labor. The suits, even when not heated, were warm and wore well; and after severe tests the electric heating circuits still operated perfectly when plugged into electric circuits.

Infra-Red Baked Bread

U. S. patent 2,340,354 has just been granted to Franklin H. Wells of Hackensack, N. J., on a bread baker that uses infra-red rays instead of the time-honored oven heat. The infra-red penetrates the dough so the heart of the loaf is heated almost as quickly as the surface. Saving of 20 to 30% of the baking time is claimed by the inventor.

Eggs by the Yard

Mr. Albert B. Clunan of Barberton, Ohio, has obtained a patent on a sealing machine which seals eggs into a rubber tube so they look like a string of link sausages. The purpose of the rubber film seal is to shut out the air which causes staleness. After the war we may buy eggs by the yard. Or maybe this is a challenge to plant and poultry breeders to include ground rubber plant in the mash so the hen can seal and package her own.

The man who falls down gets up a lot quicker than the one who lies down.

Twelve miles from the earth the *temperature* is lower over the equator than it is over the North and South poles.

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DEPEND on PRIME
Controllers
for safe, successful electric fence

When your electric fence is properly built and Prime supplies the "wallop," you've got a combination you can count on. During the past ten years, thousands of farmers have learned to depend on Prime high-line and battery controllers. See your Prime dealer.

Prime High-line Model.

THE PRIME MFG. CO., Milwaukee 4, Wisconsin

2 Vital Parts in Correct Milking Action

Quicker and more complete milking; safeguard health and production of your cows during lactation. These values you will find at their best in the ever-popular

RITE-WAY MILKER

Vital parts are specially designed inflations and balanced-stroke pulsator—two exclusive features that give correct milking action. Rite-Way efficiency and quality are *buy*-words on American farms. Economical to buy and use.

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Now is a good time to PLAN your "kitchen of tomorrow." In such planning your range will play an important part—and that is why we suggest you write for a free copy of a new Monarch booklet just issued, full of model-kitchen pictures, entitled "Tomorrow's Kitchens." When writing, please also mention the type of range you are now using.
MALLEABLE IRON RANGE CO.
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MONARCH RANGES
are built to last

Questions and Answers

Tubes for Tungar Rectifiers

In our January issue in answering the question of J. C., Pa., we stated it would be necessary to get a priority in order to buy a replacement tube for a tungar rectifier battery charger. The General Electric Co. advises us it is just as easy to get one without a priority. Dealers are supplied and may release the tubes without a priority. Automotive accessory stores are the most likely places to get them.

Dryer for Chicken Droppings

▶**Question:** *What is the most practical way to dry chicken droppings for bagging to be used like commercial fertilizer?* G. L. A., Va.

▶**Answer:** I must confess I do not know the answer to your question of what is the most practical way to dry chicken droppings. If you had large quantities of them, a drum type drier which is used in some parts of Virginia for drying fish offal or a hay drier of the drum type would be practical. These driers, however, cost upwards of $1,000.

In the summertime you might do a reasonably good job by spreading out the droppings on screen wire frames in the sun. You could speed the process by turning a fan on the droppings.

You might also rig up a large drum supported on a horizontal shaft through the center of the heads turned slowly by a small motor while a slow fire was kept burning under the drum to provide heat. You would need a door to get the droppings in and out and vents near the shaft in the ends of the drum to permit the escape of moisture.

These are merely suggestions. I have not tried these methods or seen them tried.

5 HP Motor for Silo Filler

▶**Question:** *Can a 5 hp motor be used on an L-39 ensilage cutter satisfactorily? I am willing to run it slowly.* J. M. H., Mass.

▶**Answer:** Cutters having throat widths up to 15 in. have been operated successfully with 5 hp motors where the ensilage does not have to be blown higher than about 35 feet. In order to use this size motor, all conditions must be right. V belts

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Every farm should have them.

Will never freeze when properly installed.

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"SHOK - FENCE" CONTROLLER

Superior to many selling for much more money. Provides farmer low cost fence with full control of stock. Capacity charge always on fence. Strong shocks, greater penetration, yet the safest unit made.

LOW COST - - NO MOVING PARTS
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would be best but if a flat belt is used, it should be flexible and not more than 5 in. in width and in good condition. The cutter knives must be kept sharp by sharpening them once or twice a day and they must be set accurately. The speed must be regulated by trial so that the fan will not run faster than necessary to elevate the silage to the height it is to be blown. The operator must feed the cutter uniformly and slowly enough so it will not lose speed with a resulting clogging of the pipes. The voltage should be maintained at around 230. A 7½ hp motor would be better, or a 10 hp for grass silage.

Small Electric Pasteurizer

▶**Question:** *If you know of any manufacturers that build an electrically heated milk pasteurizer (10-gal. capacity or more) please send me their name and address.*

J. F. E., Ind.

▶**Answer:** So far as I know there are no small electrically heated pasteurizers on the market. Some of the smaller batch type pasteurizers have been used with large electric water heaters or steam accumulators for heating the water. It involves doing your own engineering, however, and rigging up the outfit for yourself as I do not know of any company who puts out a complete unit of this type. The Trumbull Mfg. Co., Plainville, Conn., make large, continuous electric milk pasteurizers.

V.K. Pump; Watts for 1/6 hp Motor

▶**Question:** *I would like to know if you could find out the name of my electric pressure system pump, I can't find the name on it anywhere, only trade mark, which is V.K.; also how many watts a 1/6 hp motor takes per hour.* L. H. M., Minn.

▶**Answer:** The V.K. pump was made by the Varle Kimes Company which has now been taken over by the McKays Company, 473 Cleveland Avenue, N., St. Paul, Minn.

Your 1/6 hp motor should use about 210 watts if it is in good condition. That would mean it should run about five hours on one kilowatt hour of current. This assumes, of course, that the motor is not being overloaded.

CLASSIFIED ADVERTISING

SCHLICHTMAN'S U.S. Approved, Pullorum Tested Chicks. Per 100 Prepaid; Leghorns, Rocks, Reds, Orpingtons, Wyandottes, Minorcas, $9.90; Assorted $7.95. Free Catalog explaining two-week replacement guarantee. Schlichtman Hatchery, Appleton City, Missouri.

Lift for Litter Carrier

▶**Question:** *Could you advise me if there is any device that would fit a Louden litter carrier to raise it up when full. The lift is about 500 lbs. Would a ¼ hp motor work in raising it up?* E. F., New York

▶**Answer:** You can lift a litter carrier with a load of 500 pounds with either a hand operated or electrically operated chain hoist. These hoists are made by many different manufacturers. One which we have described in ELECTRICITY ON THE FARM is made by the Shaw-Box Crane and Hoist Division of Manning, Maxwell & Moore, Inc., Muskegon, Mich. The amount of power required will depend on the speed of hoisting. A ¼ hp motor would do it.

Effect of Voltage Variations on Equipment

▶**Question:** *Would you kindly let me know what effect current fluctuating between 120 and 130 volts has upon equipment such as flat iron, radio, motors, etc?*

C. B., New York.

▶**Answer:** Appliances such as you have mentioned are made to operate satisfactorily between 110 and 120 volts as a rule. Fluctuations of 10% in voltage do change the operating characteristics of the appliances but not seriously. Even at 130 volts you will get satisfactory operation of your appliances in most cases. Here is what happens with different electrical devices. At the higher voltage you will get more light from your lamps but the life of the lamp will be somewhat shortened. In all heating devices such as toasters, waffle irons, hot-plates, etc. you will get more heat with a corresponding increase in current consumption and the life of the heating elements will be somewhat reduced. Where the heat is controlled by a thermostat as in roasters or flatirons, you will not notice any difference in the operation. Certain types of small motors will run a little faster at the higher voltage and all motors will develop a little more power. I doubt if you would notice any difference in your radio but the tubes might have a little shorter life at high voltages the same as lamps.

Time Switch for Pump On a Weak Well

▶**Question:** *After 30 minutes pumping my well is dry and I have to wait a while before I can pump again. The trouble is I can't always just wait that long or I forget, and most of the time my water supply is lower than I would like it. Is there a switch made that has a clock li device that would run for 15 to minutes that I could set and at t end of the time it would shut o I have tried the local electric sh but to no avail.* E. G., Wis.

▶**Answer:** Portable switching time such as could be used on your pu are made by about ten different co panies including the following: Ge eral Electric Company, Schenectad N. Y.; M. H. Rhodes, Inc., 30 Ba tholomew Ave., Hartford, Com Walser Automatic Timer Co., 4 Lexington Ave., New York, N.Y Northwestern Clock Co., Brow Bldg., Omaha, Nebraska.

I would also suggest that you p a larger pulley on your pump or smaller pulley on your motor in o der to slow down your pump. Wat percolates slowly through the grou strata into your well. If you pum it out slowly you can probably pum for a longer time and get mo water. It is just possible that t water might flow in fast enough keep your pump running until t tank fills.

New Publications

(*Publications are obtainable fro the addresses given in the descri tion. Some states make sma charges for bulletins sent outside t state.*)

• THE INSIDE STORY OF DRY BA TERIES. 48pp, illus. An excellent written and illustrated booklet tell ing of the origin, construction chemical reactions, use, life, etc., o different types of dry cells, radi batteries, etc. Free from Nationa Carbon Co., New York, Chicago o San Francisco.

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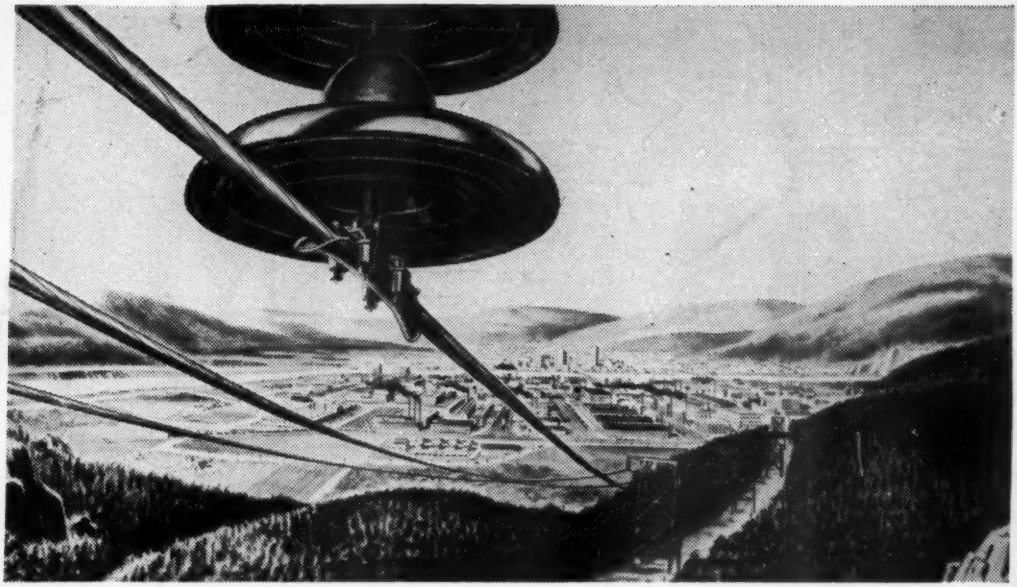

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